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FILE 'REGISTRY' ENTERED AT 20:35:43 ON 01 OCT 2003
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L1 FILE 'LREGISTRY' ENTERED AT 20:20:00 ON 01 OCT 2003
STR

L2 FILE 'REGISTRY' ENTERED AT 20:24:32 ON 01 OCT 2003
25 SEA SSS SAM L1
E HYDROGEN PEROXIDE/CN

L3 1 SEA "HYDROGEN PEROXIDE"/CN

L4 FILE 'HCA' ENTERED AT 20:26:25 ON 01 OCT 2003
26 SEA L2

L5 166247 SEA L3 OR HYDROGEN#(A) PEROXIDE# OR H2O2

L6 0 SEA L4 AND L5

L7 FILE 'REGISTRY' ENTERED AT 20:26:35 ON 01 OCT 2003
583 SEA SSS FUL L1
SAV L7 LAN205/A

L8 FILE 'HCA' ENTERED AT 20:28:54 ON 01 OCT 2003
189 SEA L7

L9 1 SEA L8 AND L5

L10 FILE 'REGISTRY' ENTERED AT 20:32:25 ON 01 OCT 2003
E HYDROGEN/CN
1 SEA HYDROGEN/CN

L11 FILE 'HCA' ENTERED AT 20:33:37 ON 01 OCT 2003
627210 SEA L10 OR HYDROGENA? OR H2 OR (HYDROGEN# OR H) (2A) (GAS##
OR GASEOUS? OR GASIF? OR ATM# OR ATMOS?)

L12 4 SEA L8 AND L11

L13 FILE 'HCAPLUS' ENTERED AT 20:33:56 ON 01 OCT 2003
190 SEA L7

L14 168987 SEA L3 OR HYDROGEN#(A) PEROXIDE# OR H2O2

L15 2 SEA L13 AND L14

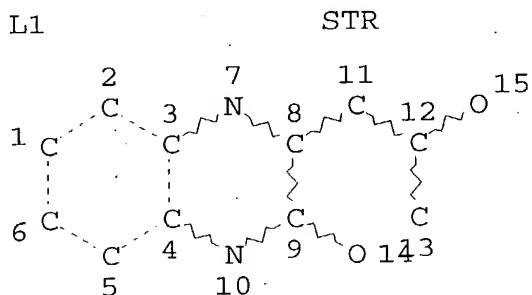
L16 633311 SEA L10 OR HYDROGENA? OR H2 OR (HYDROGEN# OR H) (2A) (GAS##
OR GASEOUS? OR GASIF? OR ATM# OR ATMOS?)

L17 5 SEA L13 AND L16

L18 5 SEA L15 OR L17

FILE 'REGISTRY' ENTERED AT 20:35:43 ON 01 OCT 2003

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NODE ATTRIBUTES:

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GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L7 583 SEA FILE=REGISTRY SSS FUL L1

100.0% PROCESSED 11381 ITERATIONS
 SEARCH TIME: 00.00.01

583 ANSWERS

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 20:36:13 ON 01 OCT 2003
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=> d l18 1-5 ibib abs hitstr hitind

L18 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 2003:696276 HCAPLUS
 TITLE: Process for the preparation of **hydrogen peroxide**
 INVENTOR(S): Borthakur, Naleen
 PATENT ASSIGNEE(S): India
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003165421 A1 20030904 US 2001-24205 20011221
 PRIORITY APPLN. INFO.: US 2001-24205 20011221

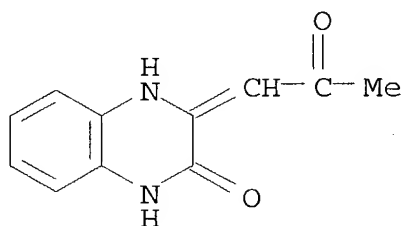
AB The invention provides a process for the prepn. of **hydrogen peroxide** by **hydrogenating** 3-2-(oxopropyl)-2(1H)-quinoxalinone in the presence of a palladium catalyst and contacting the 3-2-(oxopropyl)-1,2,3,4-tetrahydro-2-quinoxalinone with oxidant mol. oxygen or air in ethylacetate-water or chloroform-water biphasic system.

IT 1333-74-0, Hydrogen 24949-44-8 39260-15-6
 106511-13-1 106511-14-2 127443-93-0
 273196-02-4 592534-84-4 592534-85-5
 (process for prepn. of **hydrogen peroxide**)

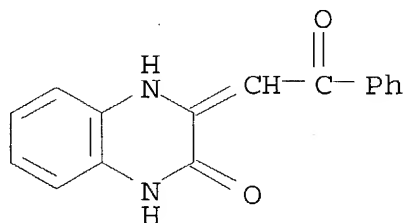
RN 1333-74-0 HCAPLUS
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

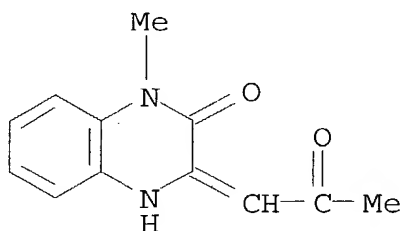
RN 24949-44-8 HCAPLUS
 CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxopropylidene)- (9CI) (CA INDEX NAME)



RN 39260-15-6 HCAPLUS
 CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxo-2-phenylethylidene)- (9CI) (CA INDEX NAME)

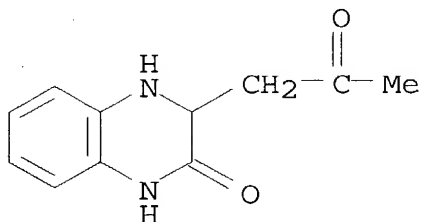


RN 106511-13-1 HCAPLUS
 CN 2(1H)-Quinoxalinone, 3,4-dihydro-1-methyl-3-(2-oxopropylidene)- (9CI) (CA INDEX NAME)



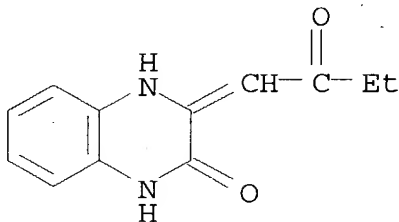
RN 106511-14-2 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxopropyl)- (9CI) (CA INDEX NAME)



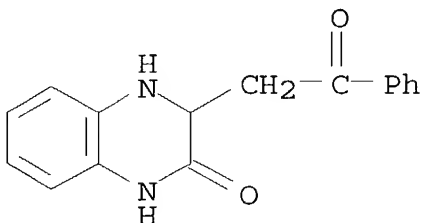
RN 127443-93-0 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxobutylidene)- (9CI) (CA INDEX NAME)



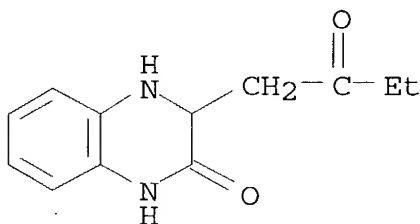
RN 273196-02-4 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxo-2-phenylethyl)- (9CI) (CA INDEX NAME)



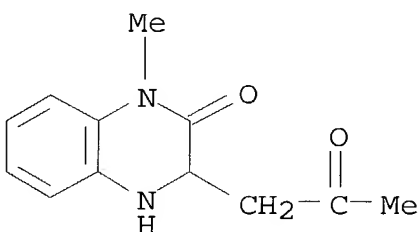
RN 592534-84-4 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,4-dihydro-3-(2-oxobutyl)- (9CI) (CA INDEX NAME)



RN 592534-85-5 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,4-dihydro-1-methyl-3-(2-oxopropyl)- (9CI)
(CA INDEX NAME)



IT 7722-84-1P, **Hydrogen peroxide**
(process for prepn. of hydrogen peroxide)

RN 7722-84-1 HCAPLUS

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IC ICM C01B015-022

NCL 423587000

CC 49-8 (Industrial Inorganic Chemicals)

ST prepn **hydrogen peroxide**

IT **Hydrogenation**

Hydrogenation catalysts

Solvents

(process for prepn. of hydrogen peroxide)

IT 7440-44-0, Carbon

(activated; process for prepn. of hydrogen peroxide)

IT 7440-05-3, Palladium

(process for prepn. of hydrogen peroxide)

IT 1333-74-0, Hydrogen 7664-93-9, Sulfuric acid 7782-44-7,
Oxygen 24949-44-8 39260-15-6 106511-13-1

106511-14-2 127443-93-0 273196-02-4

592534-84-4 592534-85-5

(process for prepn. of hydrogen peroxide)

IT 7722-84-1P, Hydrogen peroxide

(process for prepn. of hydrogen peroxide)

IT 67-66-3, Chloroform 71-43-2, Benzene 75-09-2, Dichloromethane

75-65-0, Tert-Butyl alcohol 141-78-6, Ethyl acetate

(process for prepn. of hydrogen peroxide)

L18 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1993:580281 HCAPLUS

DOCUMENT NUMBER: 119:180281

TITLE: Spectral characteristics of the reaction products of 5-phenyl-2,3,4-furantrione with o-diamines

AUTHOR(S): Rashed, Nagwa; Mousaad, Ahmed; Moussa, Adel; El Ashry, El Sayed H.

CORPORATE SOURCE: Fac. Sci., Alexandria Univ., Alexandria, Egypt

SOURCE: Spectroscopy Letters (1993), 26(6), 975-95

CODEN: SPLEBX; ISSN: 0038-7010

DOCUMENT TYPE: Journal

LANGUAGE: English

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The ¹H and ¹³C NMR and mass spectra of 2-(2-amino-4,5-dimethylphenylcarbamoyl)-3-(hydroxyphenylmethyl)-6,7-dimethylquinoxaline, 3-(hydroxyphenylmethyl)-6,7-dimethylquinoxalin-2-carboxylic- γ -lactone, 3-(hydroxyphenylmethyl)-6,7-dimethylquinoxalin-2-carboxylic acid phenylhydrazide, 3-[2-hydroxy-2-phenyl-1-(phenylhydrazono)ethyl]-6,7-dimethyl-2(1H)-quinoxalinone, 2,3-dihydro-6,7-dimethyl-3-phenylhydrazono-2-phenylfuro[2,3-b]quinoxaline, 3-(hydroxyphenylmethyl)-6,7-dimethyl-1-phenylflavazole, and 3-(acetoxypheylmethyl)-6,7-dimethyl-1-phenylflavazole (I-VII, resp., R = Me) have been studied.

IT 1333-74-0

(nuclear magnetic resonance, of quinoxaline, quinoxalinone, furoquinoxalinone, and flavazole derivs., proton and carbon-13)

RN 1333-74-0 HCAPLUS

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

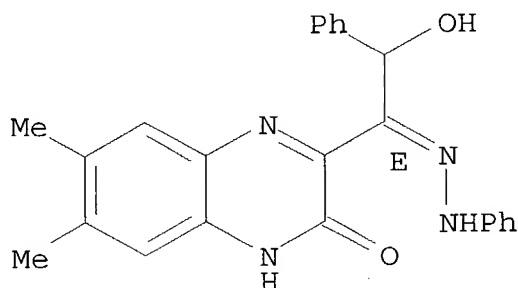
IT 150240-27-0P

(prepn. and spectra of)

RN 150240-27-0 HCAPLUS

CN 2(1H)-Quinoxalinone, 3-[2-hydroxy-2-phenyl-1-(phenylhydrazono)ethyl]-6,7-dimethyl-, (E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



CC 22-10 (Physical Organic Chemistry)
Section cross-reference(s): 33

IT 1333-74-0 14762-74-4
(nuclear magnetic resonance, of quinoxaline, quinoxalinone, furoquinoxalinone, and flavazole derivs., proton and carbon-13)
IT 150240-24-7P 150240-25-8P 150240-26-9P 150240-27-0P
150240-28-1P 150240-29-2P 150240-30-5P
(prepn. and spectra of)

L18 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1988:112397 HCAPLUS

DOCUMENT NUMBER: 108:112397

TITLE: Heterocycles from carbohydrate precursors. Part 44. A novel synthesis of pyridazinones. Preparation of 3-[1-aryl-6(1H)-pyridazinon-3-yl]-2(1H)-quinoxalinones

AUTHOR(S): El Ashry, El Sayed H.; El Kilany, Yeldez; Amer, Adel

CORPORATE SOURCE: Fac. Sci., Alexandria Univ., Alexandria, Egypt

SOURCE: Heterocycles (1987), 26(8), 2101-8

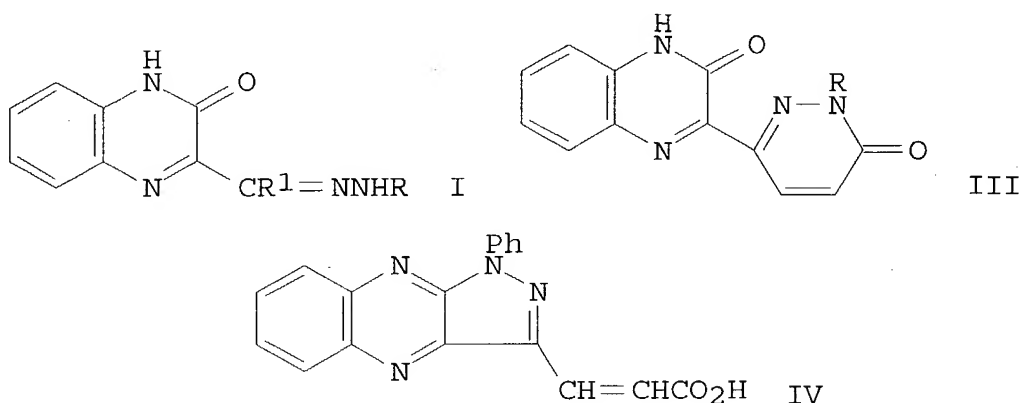
CODEN: HTCYAM; ISSN: 0385-5414

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 108:112397

GI



AB Wittig olefination of quinoxalinone derivs. I ($R = Ph, 4-MeC_6H_4, 2-MeC_6H_4, R^1 = CHO$) with $Ph_3P:CHCO_2Et$ gave adducts I [$R^1 = (E)-CH:CHCO_2Et$] (II) in 70-76% yields. Thermal isomerization of II gave pyrazonylquinoxalinones III, as did Wittig olefination of I ($R = 4-ClC_6H_4, R^1 = CHO$) or olefination of I ($R = Ph, R^1 = CHO$) at 155.degree.. Sapon. of II ($R = Ph$) gave a 1:3 mixt. of III ($R = Ph$) and pyrazoloquinoxaline IV.

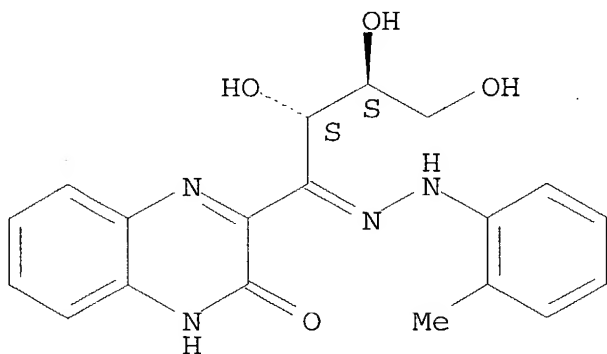
IT 113314-02-6

(oxidative cleavage of, with sodium periodate)

RN 113314-02-6 HCAPLUS

CN 2(1H)-Quinoxalinone, 3-[2,3,4-trihydroxy-1-[(2-methylphenyl)hydrazono]butyl]-, [S-(R*,R*)]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry unknown.



CC 28-18 (Heterocyclic Compounds (More Than One Hetero Atom))

IT 113314-02-6

(oxidative cleavage of, with sodium periodate)

IT 113314-13-9P

(prepn. and catalytic hydrogenation of)

L18 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1961:143616 HCAPLUS
DOCUMENT NUMBER: 55:143616
ORIGINAL REFERENCE NO.: 55:27082i,27083a-i,27084a-i,27085a-i,27086a-h
TITLE: Amino sugar syntheses. XIX. Base-catalyzed transformations of N-phenyl-D-hexosaminic [2-deoxy-2-phenylamino-D-hexonic] nitriles
AUTHOR(S): Kuhn, Richard; Weiser, Dieter; Fischer, Hans
CORPORATE SOURCE: Max-Planck Inst., Heidelberg, Germany
SOURCE: Ann. (1959), 628, 207-39
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

AB Reaction of a D-pentose with an arylamine (RNH₂) and HCN gave two epimers of 2-aryl-amino-2-deoxy-D-hexonic nitrile (I); all 8 of these were prepd. Each I was transformed stepwise, by the action of dil. alkali, to the resp. 2-aryl-amino-1,2-dideoxy-1-imino-D-hexofuranose (II), 2-aryl-amino-2-deoxy-D-hexo-1-ene-furanosylamine (III), and thence, by loss of H₂O, to 2-aryl-amino-1,2,3-trideoxy-1-imino-D-hexo-2-ene-furanose (IV). The resp. IV was used for the prepn. of the 2-amino-2,3-dideoxy-D-hexose (V) and the 3-deoxy-D-hexulosonic acid (VI). [For various I, II, III, and IV, configuration and substituent are indicated]. I (D-galacto, R = Ph) (VII) (3 g.) in 20 cc. MeOH was treated at 20.degree. with 0.1 g. KOH in 2 cc. MeOH, the mixt. kept 10 min., and the crystals removed and washed with EtOH to give 2.3 g. II (D-galacto, R = Ph) (VIII), m. 121.degree. (decompn.), [.alpha.]_{20D} -49.8.degree. (2 min.; c 0.8, MeOH). For prepg. VIII aq. NaOH or aq. Ba(OH)₂ may also be used. I (D-talo, R = Ph) (IX) (2 g.) in 8 cc. MeOH was similarly treated 20 min. with 0.3 cc. 10% KOH in MeOH to give 1.5 g. VIII, m. 121.degree.. I (D-ido, R = Ph) (X) (6 g.) was suspended in 20 cc. MeOH at 20.degree., treated with 400 mg. KOH in 10 cc. MeOH, the mixt. shaken 15 min. (clear soln.), kept 5 min., and the crystals removed, to give 4 g. III (D-xylo, R = Ph) (XI), m. 122.degree. (decompn.), [.alpha.]_{20D} -3.6.degree. (3 min.; c 0.42, MeOH). The same product resulted by action of NH₃, PhCH₂NH₂, or Et₃N in MeOH, or of aq. Ba(OH)₂. Similar treatment of I (D-gulo, R = Ph) (XII) gave a mixt. (XIII), m. 127-33.degree., of XI with IV (D-threo, R = Ph) (XIV); recrystn. of XIII gave pure XIV. X (10 g.) in 500 cc. MeOH was treated 15 min. with 0.6 g. KOH in 20 cc. MeOH, the suspension of XI heated 20 min. at 50.degree., and the soln. cooled and evapd. to 100 cc. to give 5.2 g. XIV, m. 147.degree. (MeOH-petr. ether), [.alpha.]_{20D} -122.degree. (c 0.54, MeOH), reducing to Fehling soln., no NH₂ (Van Slyke). Treatment of X with PhNH₂ in MeOH (2 days) gave 22% XIV. A soln. of 15 g. VIII in 200 cc. MeOH was heated 30 min. at 50-55.degree., kept 20 hrs. at room temp., evapd. in vacuo to 50 cc., and cooled to -5.degree. to give 9.3 g. XIV, m. 146-7.degree.. IIIA (2.3 g.) in 15 cc. MeOH was kept 20 min. at 50-60.degree. and 15 hrs. at 20.degree., and treated with petr. ether to give 1.4 g. XIV. I (Dgulo, R = p-MeC₆H₄) (XV) in MeOH (c 1.16), on addn. of 0.35 mg. KOH/cc., showed [.alpha.]_{18D} 160.degree. (2 min.) .fwdarw. 111.degree. (10 min.) .fwdarw. 39.degree. (25 min.) .fwdarw.

-7.1.degree. (40 min.) .fwdarw. -50.degree. (60 min.) .fwdarw.
-104.degree. (5 hrs.) .fwdarw. -107.degree. (7 hrs., const.). IX in
MeOH (c 1.03), on addn. of 0.33 mg. KOH/cc., showed [.alpha.]20D
-135.degree. (4 min.) .fwdarw. -80.degree. (20 min.) .fwdarw.
-30.degree. (41 min.) .fwdarw. -14.degree. (60 min.) .fwdarw.
-12.degree. (87 min.) .fwdarw. -24.degree. (160 min.) .fwdarw.
-56.degree. (6 hrs.) .fwdarw. -106.degree. (24 hrs., const.). I
(D-gluco, R = Ph) (XVI) (15 g.) in 100 cc. MeOH was treated with 0.5
g. KOH, the soln. kept 20 hrs. at room temp. and evapd. in vacuo,
the sirup stirred with 150 cc. H2O, and the crystals recrystd.
(MeOH-H2O) to give 10 g. IV (D-erythro, R = Ph) (XVII), m.
109-10.degree., [.alpha.]20D 74.8.degree. (c 1.38, MeOH), reducing
to Fehling soln. I (D-attro, R = Ph) (XVIII) (1 g.); similarly
treated, gave 0.6 g. XVII, m. 110.degree. I (D-manno, R = Ph) (XIX)
was isolated in small yield from the mother liquor from the prepn.
of XVI (from D-arabinose, PhNH2, and HCN) by repeated pptn. with
EtOH and petr. ether, [.alpha.]20D -102.degree. (c 0.61, MeOH). XIX
in MeOH (c 0.61), on addn. of 0.67 mg. KOH/cc., showed [.alpha.]20D
-90.degree. (2 min.) .fwdarw. -55.degree. (5 min.) .fwdarw.
-6.5.degree. (10 min.) .fwdarw. 16.4.degree. (14 min.) .fwdarw.
56.degree. (24 min.) .fwdarw. 67.degree. (1 hr., const.). I
(D-allo, R = Ph) (XX) in MeOH, [.alpha.]20D 148.degree. (c 0.44), on
addn. of 0.33 mg. KOH/cc., showed [.alpha.]20D -3.4.degree. (2 min.)
.fwdarw. -36.4.degree. (3 min.) .fwdarw. -52.degree. (10 min.)
.fwdarw. -58.degree. (16 min.) .fwdarw. -58.degree. (35 min.)
.fwdarw. -54.3.degree. (75 min.) .fwdarw. -9.1.degree. (9 hrs.)
.fwdarw. 21.degree. (40 hrs.). To 3 g. prehydrogenated
Pd(OH)2-BaSO4 (XXI) in 15 cc. H2O was added 2.5 g. VIII in 60 cc.
0.5N HCl, the mixt. **hydrogenated** 100 min. (H uptake, 2.2
mol. equivs.) and filtered, the soln. freed from Cl- by addn. of
Ag2CO3 and filtered, the soln. freed from Ag+ with H2S, the filtrate
evapd. in vacuo, and the residue crystd. from H2O-EtOH, to give 1 g.
2-amino-2-deoxy-D-galactonic acid (XXII), m. 198-203.degree.
(decompn.), [.alpha.]18D -4.95.degree. (c 0.6, H2O), -11.3.degree.
(5 min.) .fwdarw. -31.degree. (24 hrs.; c 0.97, 2N HCl). To a
suspension of 2 g. VIII in 25 cc. H2O was added 75 cc. 0.1N H2SO4
during 35 min.; after addn. of 65 cc., a clear soln. (pH 5)
resulted, and addn. of the rest gave pH 3. During the addn., the
content of NH4+ ions increased (Nessler reagent). The soln. was
heated 90 min. (steam bath), evapd. in vacuo, the residue treated
with 50 cc. MeOH-EtOH, the mixt. kept 12 hrs. at 0.degree.,
filtered, and the crystals washed with MeOH to give 0.36 g.
(NH4)2SO4; the filtrate was **hydrogenated** as above and gave
0.9 g. XXII. Hydrolysis of VIII with dil. HCl gave only 50% NH4Cl.
An aq. suspension of VIII was mixed with Ba(OH)2 soln. and gently
warmed; VIII quickly dissolved and XIV soon crystd. The mixt. was
filtered, the filtrate heated 20 min. (steam bath; HCN evolution),
the Ba2+ ions pptd. with 2N H2SO4, the mixt. filtered, and the
filtrate evapd. in vacuo to give a low yield of cryst.
2,3-dideoxy-2-phenylamino-D-threo-hexono-2-ene-1,4-lactone (XXIII).
XI reduced cold NH4OH-AgNO3 soln. and Fehling soln. (60-70.degree.),
but not Tillmans reagent. To a suspension of 10 g. XI in 50 cc.

H₂O, 4 g. NaHCO₃ was added and, dropwise, N iodine (uptake, 77 cc.). XI (20 g.) in 300 cc. satd. Ba(OH)₂ was heated on the steam bath until the Prussian blue reaction was neg. (2 hrs.; NH₃ evolution), the Ba²⁺ ions were pptd. with H₂SO₄, the mixt. filtered, 20 cc. concd. NH₄OH added to the filtrate, the soln. evapd. in vacuo, the sirup boiled with 50 cc. MeOH, the crystals sepd. from mother liquor (XXIV), washed (EtOH), and recrystd. (90% aq. MeOH-Et₂O) to give 5.9 g. NH₄ 2-deoxy-2-phenylamino-D-gulonate (XXV), m. 165.degree., [.alpha.]_{20D} 45.3.degree. (c 1.2, H₂). XXV (3 g.) in 20 cc. N HCl was mixed with 3 g. XXI in 10 cc. H₂O and **hydrogenated** 5 hrs. to give a sirup which was condensed with BzH-HCl to give 2-aminomono-O-benzylidene-2-deoxy-D-gulonolactone-HCl, m. 192.degree., [.alpha.]_{19D} -58.degree. (c 0.88, 50% EtOH). XXIV was mixed with 100 cc. EtOAc to ppt. an oil which crystd. (2 days) and was recrystd. (95% EtOH, addn. of EtOAc) to give 2.3 g. NH₄ 2-deoxy-2-phenylamino-D-idonate (XXVI), m. 159-60.degree., [.alpha.]_{18D} -33.7.degree. (c 0.41, H₂O). XXVI (1.3 g.) was **hydrogenated** in acid soln. in the presence of 2 g. XXI to give 2-amino-2-deoxy-D-idonic acid, m. 230-6.degree. (decompn.) (from H₂O-MeOH), (c 1.75, 25% HCl). A suspension of 10 g. XI in 30 cc. H₂O was heated 3 hrs. on the steam bath, kept 3 hrs. at 0.degree., filtered, and the ppt. recrystd. from H₂O (C) to give 0.7 g. XXIII, m. 142-4.degree.; the filtrate was treated with C, mixed with 1 cc. concd. NH₄OH, and evapd. in vacuo, the residue treated with 50 cc. boiling EtOH, and the crystals fractionally recrystd. (90% MeOH; addn. of EtOAc) to give 2 g. XXV and 0.3 g. XXVI. XI (10 g.), suspended in 20 cc. H₂O, was dissolved by addn. of 40 cc. N HCl, the soln. (pH 4) added to 25 cc. 2N Na₂CO₃, the pptd. sirup crystd. by addn. of 5 cc. N NaOH, and the crystals washed with H₂O to give 3.3 g. XIV, m. 142-3.degree.. XI (13 g.) was quickly dissolved in 100 cc. 2N H₂SO₄ and, after 30 min., the yellow ppt. was removed, washed with H₂O and dried to give 4 g. 4,6-dihydroxy-2-phenylaminosorbic 1,4-lactone (XXVII), m. 104.degree. (MeOH-H₂O), [.alpha.]_D 0.degree., reduced Fehling soln., decompd. by boiling concd. HCl, no reaction with PhNHNH₂, deep-red color with PhN₂Cl (H₂O-C₅H₅N.fwdarw.MeOH), no reaction with Ehrlich aldehyde reagent. XXVII (100 mg.) in 1 cc. C₅H₅N was treated with 0.5 cc. Ac₂O to give 70 mg. 6-acetate of XXVII, needles (EtOH-H₂O), m. 111.degree.. A soln. of 2.3 g. XXVII in 70 cc. MeOH was mixed with 2.3 g. XXI in 25 cc. 1:5 H₂O-MeOH and **hydrogenated** 2 hrs., to give 1.5 g. 4,6-dihydroxy-2-phenylaminohexanoic 1,4-lactone (XXVIII), needles, m. 134-5.degree. (MeOH). On **hydrogenation** of XXVIII, the Ph group was **hydrogenated**; periodate oxidn. of the product (pH 11) gave no HCHO. Acetylation of XXVIII gave the 6-acetate, m. 108.degree. (MeOH-H₂O). To a suspension of 0.5 g. XIV in 2 cc. H₂O was added 4 cc. 0.5N H₂SO₄, the mixt. filtered, the soln. kept at 0.degree., and the crystals removed and washed (MeOH) to give 0.4 g. XIV. 0.5H₂SO₄, decompg. at 140.degree. (browning, 115.degree.). Addn. of 2 cc. 2N HCl to a suspension of 1 g. XIV in 3 cc. H₂O similarly gave 0.5 g. XIV.HCl, m. 83-7.degree.. Each salt regenerated XIV on treatment with 2N Na₂CO₃. To a suspension of XIV in 15 cc. H₂O was added 15

cc. 2N HCl, and the soln. kept 2 days at 10.degree. to give 0.55 g. (crude) XXIII, m. 144.degree. (H₂O), [α .]20D -181.degree. (c 0.68, MeOH), reduced Fehling soln. A suspension of 20 g. XIV in 200 cc. H₂O was heated 90 min. (steam bath), decanted hot from about 3 g. oil, and the soln. cooled to give 5 g. XXIII, m. 144.degree.. Acetylation of XXIII with Ac₂O-C₅H₅N gave XXIII diacetate (XXIX), needles, m. 87.degree. (MeOH + H₂O), [α .]19D -124.degree. (c 0.95, MeOH), reducing to Fehling soln. XXV (3 g.) and 1 cc. concd. HCl was evapd. to dryness in vacuo, the residue mixed with 20 cc. Ac₂O and 3 g. anhyd. NaOAc, the mixt. boiled 1 min., cooled, treated with 10 cc. H₂O and then with satd. Na₂CO₃ until neutral, and the pptd. sirup rubbed with H₂O to give 0.8 g. cryst. XXIX. VIII (5 g.) was hydrolyzed with dil. H₂SO₄, and the (NH₄)₂SO₄ removed with EtOH to give 2.3 g. sirupy N-Ph deriv. (XXX) of XXII; XXX was treated (as for XXV .fwdarw. XXIX) to give 0.3 g. XXIX. A suspension of 0.64 g. XXIII in 40 cc. H₂O was mixed with 2 g. NaIO₄ in 10 cc. H₂O, the mixt. kept 1 hr. in the dark at 20.degree., filtered, acidified (dil. HCl), the excess periodate destroyed with NaAsO₂, the soln. buffered with NaOAc, filtered, the soln. mixed with a soln. of dimedon in EtOH, and the mixt. kept 3 hrs. to give 0.44 g. dimedon-HCHO adduct. XXIII (6 g.) in 200 cc. anhyd. MeOH at -80.degree. was treated 70 min. with 5-6% O₃-O₂ (12 l./hr.), the product **hydrogenated** in the presence of 3 g. prehydrogenated PdO in 20 cc. anhyd. MeOH (H uptake, 640 cc. at 20.degree./752 mm.), the mixt. filtered, the filtrate evapd. in vacuo, the residue dissolved in 10 cc. H₂O, and extd. with three 15-cc. portions 1:1 EtOAc:Et₂O (XXXI) to give an aq. (A) and an org. (B) phase. A was evapd. in vacuo to give 2.5 g. sirupy, impure D-threose, descending papergram R_f 0.65 (PhNH₂ H phthalate and periodate-benzidine sprays). B was dried and evapd., the residue mixed with aq. Ca(OAc)₂ soln., the mixt. boiled, cooled, and filtered, the ppt. (Ca salt) treated with N H₂SO₄, filtered, the soln. extd. with XXXI, the ext. dried, evapd., and the residue crystd. (C₆H₆) to give oxanilic acid. A soln. of 0.6 g. XXIII in 25 cc. MeOH was mixed with 1 g. XXI in 20 cc. MeOH and **hydrogenated** 30 min. the mixt. filtered, the soln. evapd., the residue dissolved in EtOAc, the soln. treated with dry HCl, and the ppt. crystd. from 3 cc. EtOH to give 0.2 g. 2,3-dideoxy-2-phenylamino-D-lyxo (or D-xylo)-hexonic 1,4-lactone hydrochloride, needles, m. 158-62.degree., [α .]19D -34.degree. (c 1.1, H₂O), nonreducing to Fehling soln. A mixt. of 3.4 g. XXIII with 30 cc. 0.5N HCl and 4 g. XXI in 10 cc. H₂O was **hydrogenated** 21 hrs. (H uptake, 2.76 molar equivs.), the mixt. filtered, the soln. evapd. and the residue crystd. (EtOH; then 90% aq. MeOH-EtOAc) to give 1.2 g. 2-amino-2,3-dideoxy-D-lyxo (or D-xylo)-hexonic 1,4-lactone hydrochloride (XXXII), m. 202-3.degree., [α .]22D -31.9.degree. (c 0.76, H₂O). XXXII was reduced with NaHg-H₂SO₄ to V (D-lyxo or D-xylo) hydrochloride, m. 146.degree., [α .]20D 60.2.degree. (3 min.) .fwdarw. 23.9.degree. (4 hrs.; c 0.83, H₂O), Rglucosamine 1.05. Action of warm dil. acids on XIV or XXIII gave the 1,4-lactone (XXXIII) of VI (D-threo) (XXXIV). An aq. soln. of XXXIV was treated 12 hrs. with excess o-C₆H₄(NH₂)₂ to give the

quinoxaline deriv. of XXXIV m. 160-61.degree. (EtOH), [.alpha.]20D 39.4.degree. (c 1.01, MeOH). A soln. of 0.7 g. XXXIII in 3 cc. H₂O was treated with 10 drops 30% H₂O₂ and the mixt. warmed to 50.degree. (CO₂ evolution) and, finally, boiled 1 min. A papergram showed no XXXIII, but 2 new, faster-moving spots. The soln. was evapd. in vacuo, the residue heated 1 min. at 125.degree. with 1 cc. PhNHNH₂, and the product digested with EtOAc to give 0.15 g. phenylhydrazide (XXXV) of 2-deoxy-D-threo-pentonic acid (XXXVI), m.p. and mixed m.p. 138.degree.. Sirupy XXXIII was mixed with an equal wt. of PhNHNH₂, the mixt. heated 2 min. on the steam bath, treated with H₂O, and the mixt. filtered to give the phenylhydrazone (XXXVII) of XXXIII, yellow leaflets, m. 213-14.degree. (EtOH or EtOAc), [.alpha.]18D -270.degree. (c 0.45, C₅H₅N). The same compd. resulted on short heating of XIV or XXIII with 50% HOAc and treatment with PhNHNH₂, or by treating with PhNHNH₂ in 50% HOAc at 70-80.degree.. Attempts to split the hydrazone with BzH or AcCO₂H failed. Treatment of XXXVII with Ac₂O-C₅H₅N 2 min. at 65.degree. gave a quant. yield of diacetate of XXXVII, prisms, m. 188.degree. (10:1 EtOHMe₂CO, plus petr. ether), [.alpha.]20D -137.degree. (c 0.76, C₅H₅N). A soln. of XXXVII and excess p-O₂NC₆H₄CHO in PrOH was boiled 4 hrs. to give the p-nitrobenzylidene deriv., yellow needles, m. 245.degree. (C₅H₅N-H₂O), [.alpha.]19D -138.degree. (c 0.38, C₅H₅N). **Hydrogenation** of XXXVII in aq. ethanolic HCl in the presence of XXI, with uptake of 2 molar proportions H, gave 20-30% XXXII, m. 203.degree., [.alpha.]20D -31.degree. (c 0.96, H₂O). XIV was treated with PhNHNH₂ in 50% HOAc, the ppt. was removed, dried, extd. with Et₂O and with EtOAc, the combined exts. evapd., the residue dissolved in EtOH and treated with H₂O to give the phenylhydrazide phenylhydrazone (XXXVIII) of XXXIII, yellow needles, m. 204-5.degree., [.alpha.]18D 13.9.degree. (c 0.57, C₅H₅N). **Hydrogenation** of XXXVIII as for XXXVII gave XXXII. A suspension of 6 g. XIV in 200 cc. anhyd. MeOH was ozonized 1 hr. (O speed, 14 l./hr.; 5-6% O₃), the insol. matter (about 1 g.) removed, the soln. **hydrogenated** (Pd; H uptake, 280 cc.), the mixt. filtered, and the filtrate evapd. to give crude D-threose, identified by R_f on a papergram. A mixt. of 10 g. XIV and 120 cc. 0.3N Ba(OH)₂ was heated 5 hrs. on a steam bath, the insol. residue removed, the soln. passed through Amberlite IR-120, the column eluted with 200 cc. H₂O, the combined eluates evapd. in vacuo, the sirup (4.3 g.) dissolved in 25 cc. H₂O, and 0.3 cc. PhNHNH₂ added to give 0.6 g. XXXVII; the mother liquor was re-treated with Amberlite IR-120, the combined eluates evapd., the residue (2.9 g.) dissolved in 1:2 EtOH-Me₂CO, the mixt. filtered, and the soln. mixed with 10 vols. petr. ether, to give 1.5 g. anilide (XXXIX) of XXXVI, m. 118.degree. (EtOH-petr. ether), [.alpha.]19D 31.3.degree. (c 0.96, H₂O). XXXIX was treated with boiling 2N NaOH, the mixt. cooled and extd. with Et₂O, the aq. soln. evapd., and the residue treated with MeOH to give the Na salt, needles, m. 183.degree., [.alpha.]18D 12.1.degree. (c 1.24, H₂O). A mixt. of 1 g. XXXIX and 2 cc. 2N KOH was heated 1 hr. on a steam bath, the K⁺ ions removed with Amberlite IR-120, the eluate evapd., the residue heated 5 min. at 130.degree., cooled to 80.degree., 1 cc. PhNHNH₂ added, the mixt. kept 5 min. at

130.degree., cooled, washed with abs. Et₂O, and the residue crystd. by brief boiling with EtOAc to give 0.23 g. XXXV, m. 139.degree. (EtOH + Et₂O), [.alpha.]_D 8.8.degree. (c 1.6, MeOH). By methods similar to those used for XIV, XVII gave similar products; XVII.HCl, colorless needles, m. 76-7.degree.. Treatment of XVII with dil. HCl 2 days at room temp. gave X (D-erythro) (XL), prisms, m. 134.degree. (H₂O), [.alpha.]_D 20D 115.degree. (c 0.92, MeOH). A mixt. of 1.8 g. XL, 30 cc. H₂O, 4 cc. 2N HCl, and 2 g. XXI was **hydrogenated** 5 hrs. (uptake, 3.2 molar equivs. H), the mixt. filtered, the soln. evapd., and the sirup crystd. (EtOH) to give 0.7 g. D-arabino or D-ribo isomer (XLI) of XXXII, prisms, m. 194.degree. (EtOH-EtOAc), [.alpha.]_D 20D -7.8.degree. (c 2.04, H₂O). Hydrolysis of XL with Amberlite IR-120, as for XXIII, gave 70% sirupy VI (D-erythro) (XLII), [.alpha.]_D 22D -34.5.degree. (c 41.3, H₂O), R_f 0.21; quinoxaline deriv. m. 174.degree. (EtOH-EtOAc), [.alpha.]_D 19D -58.4.degree. (c 0.48, MeOH). XLII was converted to the D-erythro isomer (XLIII) of XXXV, m. 145.degree.. A mixt. of 1 g. XVII, 50 cc. 50% HOAc, and 1 cc. PhNHNH₂ was kept 20 min. at 60-70.degree., the soln. poured into 50 cc. H₂O, and the ppt. washed with H₂O and crystd. from H₂O to give 0.4 g. D-erythro isomer (XLIV) of XXXVII, yellow needles, m. 229.degree. (decompn.), [.alpha.]_D 19D 168.degree. (c 2.47, C₅H₅N). A mixt. of 1 g. XLII, 100 cc. EtOH, 10 cc. 2N HCl, and 1 g. XXI in 15 cc. H₂O was **hydrogenated** 14 hrs. (H uptake, 2.3 molar equivs.), 15 cc. H₂O added, the suspension centrifuged, the soln. evapd. in vacuo, the residue twice extd. with abs. EtOH and twice crystd. from MeOH to give 80 mg. XLI, needles, m. 195.degree., [.alpha.]_D 22D -7.5.degree. (c 1.6, H₂O). XVII was treated 1-2 hrs. with Ba(OH)₂ soln. at 45-55.degree. as for XIV, the warm mixt. filtered, the soln. cooled, and the crystals recrystd. (H₂O or MeOH); the mother liquor was reheated 10 min., freed from Ba²⁺ ions with 2N H₂SO₄, the hot suspension filtered, and the filtrate cooled to give a second crop (total, 55%) of D-erythro isomer (XLIV) of XXXIX, leaflets, m. 187.degree. (MeOH), [.alpha.]_D 20D -31.8.degree. (c 0.85, MeOH). From the mother liquor, some XLII could be pptd. as the Ca salt.

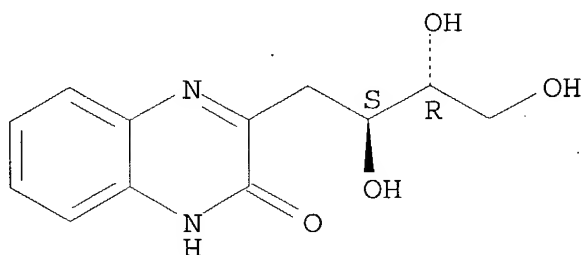
XLIV was boiled 90 min. with 2N KOH, the soln. cooled, passed through a column of Amberlite IR-120, the eluate evapd., the oil kept 10 min. at 130-40.degree., mixed with an equal wt. of PhNHNH₂, the mixt. kept 5 min. at 130-40.degree., cooled, washed with Et₂O, and rubbed with EtOAc to give XLIII, needles (MeOH-Et₂O), m. 149.degree., [.alpha.]_D 19D -11.degree. (c 1.28, MeOH). The infrared spectra of XVIII, VIII, XI, XIV, XXIII, XXVII, and XXXVIII, and the ultraviolet spectra of XXVII, 2-acetamido-4,6-dihydroxysorbic lactone, and 3-acetamido-6(acetoxymethyl)-2H-pyran-2-one were recorded.

IT 23276-49-5, Erythritol, 1-deoxy-1-(3-hydroxy-2-quinoxaliny)-, D- 122240-52-2, Threitol, 1-deoxy-1-(3-hydroxy-2-quinoxaliny)-(?), D- (prepn. of)

RN 23276-49-5 HCAPLUS

CN 2(1H)-Quinoxalinone, 3-(2,3,4-trihydroxybutyl)-, [S-(R*,S*)]- (9CI)
(CA INDEX NAME)

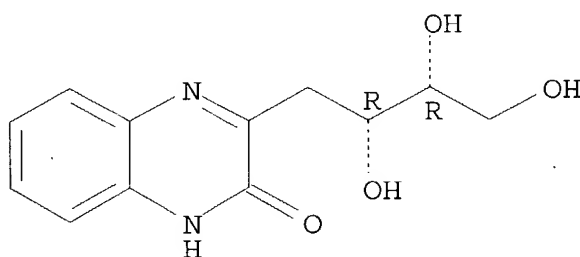
Absolute stereochemistry.



RN 122240-52-2 HCAPLUS

CN Threitol, 1-deoxy-1-(3-hydroxy-2-quinazolinyl)-, D- (6CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 10C (Organic Chemistry: Carbohydrates, Amino Acids, and Proteins)
 IT 488-32-4, Idonic acid, 2-amino-2-deoxy-, D- 17510-99-5,
 D-erythro-Hexulosonic acid, 3-deoxy- 23276-49-5,
 Erythritol, 1-deoxy-1-(3-hydroxy-2-quinoxaliny)-, D- 100063-47-6,
 Sorbic acid, 2-anilino-4,6-dihydroxy-, .gamma.-lactone
 107036-82-8, D-ribo-Hexonic acid, 2-amino-2,3-dideoxy-,
 .gamma.-lactone, hydrochloride 107036-85-1, D-lyxo-Hexonic acid,
 2-amino-2,3-dideoxy-, .gamma.-lactone, hydrochloride 108595-07-9,
 Mannonitrile, 2-anilino-2-deoxy-, D- 108595-27-3,
 D-xylo-Hexofuranos-1-enylamine, 2-anilino-2-deoxy- 108629-97-6,
 D-erythro-Hexulosonic acid, 3-deoxy-, .gamma.-lactone,
 phenylhydrazone 108846-30-6, D-xylo-Hexonic acid,
 2-anilino-2,3-dideoxy-, .gamma.-lactone, hydrochloride
 109047-67-8, D-erythro-Hexon-2-enic acid, 2-anilino-2,3-dideoxy-,
 .gamma.-lactone 109062-47-7, D-lyxo-Hexonic acid,
 2-anilino-2,3-dideoxy-, .gamma.-lactone, hydrochloride
 109188-62-7, Gulonitrile, 2-anilino-2-deoxy-, D- 109188-63-8,
 Idonitrile, 2-anilino-2-deoxy-, D- 109188-64-9, Talonitrile,
 2-anilino-2-deoxy-, D- 109256-98-6, Galactonitrile,
 2-anilino-2-deoxy-, D- 109256-99-7, Altronitrile,
 2-anilino-2-deoxy-, D- 109367-09-1, Norleucine,
 4,6-dihydroxy-N-phenyl-, .gamma.-lactone 110533-61-4,
 D-erythro-Pentonic acid, 2-deoxy-, phenylhydrazide 112072-00-1,
 D-threo-Hexulosonic acid, 3-deoxy-5,6-O-p-nitrobenzylidene-,

phenylhydrazone 114843-22-0, D-lyxo-Hexose, 2-amino-2,3-dideoxy-,
hydrochloride 114843-23-1, D-xylo-Hexose, 2-amino-2,3-dideoxy-,
hydrochloride 118101-15-8, D-erythro-Pentonanilide, 2-deoxy-
118101-16-9, D-threo-Pentonanilide, 2-deoxy- 119149-47-2,
D-arabino-Hexonic acid, 2-amino-2,3-dideoxy-, .gamma.-lactone,
hydrochloride 119149-48-3, D-xylo-Hexonic acid,
2-amino-2,3-dideoxy-, .gamma.-lactone, hydrochloride 122147-13-1,
D-threo-Hexon-2-enimidic acid, 2-anilino-2,3-dideoxy-,
.gamma.-lactone 122147-14-2, D-erythro-Hexon-2-enimidic acid,
2-anilino-2,3-dideoxy-, .gamma.-lactone 122240-52-2,
Threitol, 1-deoxy-1-(3-hydroxy-2-quinazolinyl)-(?), D-
(prepn. of)

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ACCESSION NUMBER: 1961:124877 HCAPLUS

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TITLE: 1,4-Oxazines. III. The condensation of
bifunctional .alpha.-oxo esters with
o-aminophenols and o-phenylenediamines to
symmetrical cyanines

AUTHOR(S): Biekert, Ernst; Enslein, Lore

CORPORATE SOURCE: Max-Planck-Inst. Biochem., Munich, Germany

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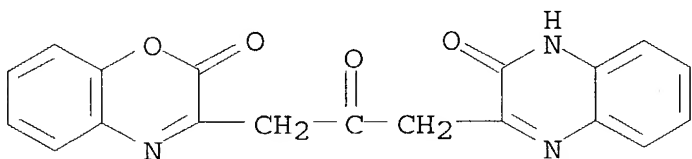
AB cf. CA 55, 19928h. The condensation of o-aminophenols with
.alpha.-oxo esters to 1,4-benzoxazin-2-ones was extended to
bifunctional .alpha.-oxo esters. The bis(1,4-benzoxazin-2-on-3-
yl)acetones obtained from CO(CH₂COCO₂Et)₂ (I) were high-melting,
deeply colored compds. with a sym. cyanine structure; with
o-phenylenediamines similar cyanine-like compds. of deep color were
formed. 4,6,1,3-(O₂N)₂C₆H₂(OH)₂ in EtOH **hydrogenated** over
Raney Ni and added under N to an equiv. amt. of EtO₂CCOCH₂CO₂Et gave
about 50% benzobis(1,4-oxazin-2-one), m. 270-5.degree. (PhCl), with
slow darkening. I (600 mg.) and 200 mg. o-H₂NC₆H₄OH (II) in cold
MeOH refluxed 0.5 hr. with 1 drop 2N HCl and concd. gave about 75%
Et 5-(1,4-benzoxazin-2-on-3-yl)-2,4-dioxovalerate (III), orange
needles, m. 200.degree. (MeOH). A similar run during 1 day at room
temp. gave about 50% III; in refluxing BuOH the reaction was
completed after several min. 2,3,5-H₂NMe₂C₆H₂OH (IV) (66 mg.) and
132 mg. I in 5 cc. MeOH heated briefly to 50.degree. yielded about
60% Et 5-(5,7-dimethyl-1,4-benzoxazin-2-on-3-yl)-2,4-dioxovalerate
(V), orange needles, m. 248.degree. (BuOH). I and
2,4,6-H₂NMe₂C₆H₂OH (VI) gave similarly 75-80% 6,8-di-Me isomer of V,
orange needles, decomp. 236.degree. (Me₂CO). 2,3-H₂NC₁₀H₆OH (VII)
in about 10 cc. boiling MeOH added to 224 mg. I in MeOH and kept 6
days at room temp. yielded 67% 5-(naphtho[2',3':5,6]-1,4-oxazin-2-on-
3-yl) analog of III, orange-red needles, decomp. 243.degree.
(CHCl₃). I (2.58 g.) and 2.18 g. II heated 10 min. at 165.degree.
and boiled several times with MeOH left about 60% dark red

1,3-bis(1,4-benzoxazin-2-on-3-yl)acetone (VIII), decomp. about 305.degree. (HCONMe₂); a similar run at room temp. during 6 weeks gave about 50% VIII; in refluxing BuOH 60% VIII was obtained. II (80.5 g.) and 91 g. I in 1.5 l. C₆H₆ refluxed 5 hrs. gave 117 g. VIII, decomp. 300.degree.. I (133 mg.) and 152 mg. IV in MeOH evapd. and heated to 150.degree. gave 67% bis(5,7-dimethyl-1,4-benzoxazin-2-on-3-yl)-acetone (IX), violet needles, decomp. 330.degree. (HCONMe₂). VI gave similarly the 6,8-di-Me isomer of IX, decomp. 319.degree. (HCONMe₂). III (100 mg.) and 50 mg. IV in a little hot HCONMe₂, slowly distd. gave 75% 1-(1,4-benzoxazin-2-on-3-yl)-3-(5,7-dimethyl-1,4-benzoxazin-2-on-3-yl)acetone (X), red-violet needles, decomp. 293.degree. (HCONMe₂). VII and I heated at 160-80.degree. without solvent gave the bis(naphtho-[2',3';5,6]-1,4-oxazin-2-on-3-yl)acetone, decomp. 318.degree. (dioxane). VIII (2 g.) added during 1 hr. with stirring at room temp. to about 10 cc. 20% oleum, stirred to soln., dild. with stirring and cooling slowly with 200 cc. dry Et-OAc, kept several hrs. at 0.degree., and centrifuged gave the very hygroscopic di-SO₃H deriv. of VIII, did not melt up to 360.degree.. o-C₆H₆(NH₂)₂ (1.1 g.) in the min. amt. MeOH added dropwise to 2.8 g. I in 25 cc. hot 90% MeOH, refluxed 2.5 hrs., and filtered yielded 1.05 g. Et 5 (4-aza-3-coumarinyl)-2,4-dioxovalerate (XI), dark red, decomp. 248.degree. (HCONMe₂); the mother liquor gave 1 g. brown red needles, m. 147.degree., which were not further investigated. XI (433 mg.) and 155 mg. II heated 20 min. at 170.degree., cooled, and boiled with MeOH gave 445 mg. 1-(4-aza-3-coumarinyl)-3-(quinoxal-3-on-2-yl)acetone, red needles, decomp. 305.degree. (HCONMe₂-EtOH). o-H₂NC₆H₄NHPh (XII) (560 mg.) in BuOH added to 800 mg. I in BuOH and refluxed 0.5 hr. gave 380 mg. 4-Ph deriv. of XI, decomp. 225.degree. (BuOH). XII (8 g.) and 5.2 g. I heated 1 hr. under N at 110-20.degree., cooled, and dild. with MeOH, and the cryst. ppt. boiled with MeOH yielded 3.5 g. 1,3-bis(4-phenylquinoxal-3-on-2-yl)acetone, decomp. 281.degree. (BuOH). The ultraviolet absorption spectrum of VIII and the infrared absorption spectra of III and VIII were recorded.

IT 101884-52-0, 2H-1,4-Benzoxazin-2-one, 3-[3-(3,4-dihydro-3-oxo-2-quinoxaliny)acetonyl]- 102311-83-1, 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-4-phenyl-, ethyl ester 106596-07-0, 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-, ethyl ester 115759-36-9, 2(1H)-Quinoxalinone, 3,3'-(2-oxotrimethylene)bis[1-phenyl- (prepn. of)]

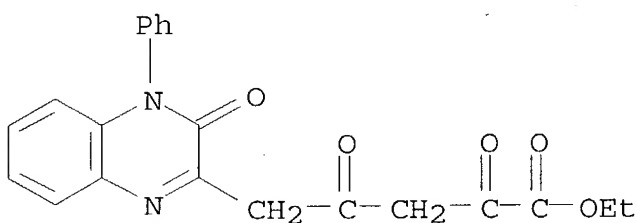
RN 101884-52-0 HCAPLUS

CN 2H-1,4-Benzoxazin-2-one, 3-[3-(3,4-dihydro-3-oxo-2-quinoxaliny)acetonyl]- (6CI) (CA INDEX NAME)



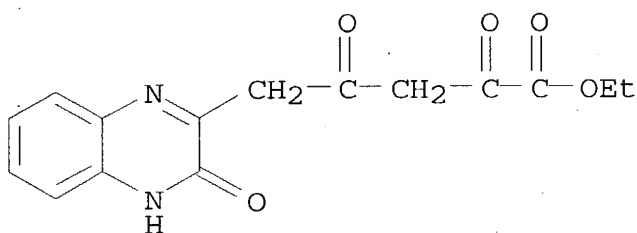
RN 102311-83-1 HCAPLUS

CN 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-4-phenyl-, ethyl ester (6CI) (CA INDEX NAME)



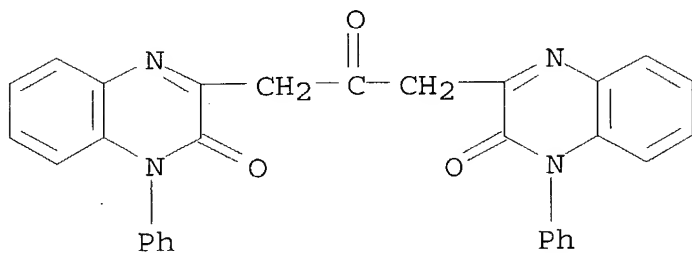
RN 106596-07-0 HCAPLUS

CN 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-, ethyl ester (6CI) (CA INDEX NAME)



RN 115759-36-9 HCAPLUS

CN 2(1H)-Quinoxalinone, 3,3'-(2-oxotrimethylene)bis[1-phenyl- (6CI) (CA INDEX NAME)



CC 10G (Organic Chemistry: Heterocyclic Compounds)

IT 101098-00-4, 2H-1,4-Benzoxazine-3-valeric acid, .alpha.,.gamma.,2-trioxo-, ethyl ester **101884-52-0**, 2H-1,4-Benzoxazin-2-one, 3-[3-(3,4-dihydro-3-oxo-2-quinoxaliny)acetyl]- 102241-60-1, 2H-1,4-Benzoxazin-2-one, 5,7-dimethyl-3,3'-(2-oxotrimethylene)bis-**102311-83-1**, 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-4-phenyl-, ethyl ester **106596-07-0**, 2-Quinoxalinevaleric acid, 3,4-dihydro-.alpha.,.gamma.,3-trioxo-, ethyl ester 111475-91-3, 2H,8H-Benzo[1,2-b:5,4-b']bis[1,4]oxazine-3,7-diacetic acid, 3,4,6,7-tetrahydro-2,8-dioxo-, diethyl ester 111664-72-3, 2H-Naphth[2,3-b]-1,4-oxazine-3-valeric acid, .alpha.,.gamma.,2-trioxo-, ethyl ester 112551-64-1, 2H-1,4-Benzoxazin-2-one, 3,3'-(2-oxotrimethylene)bis[6,8-dimethyl-112552-00-8, 2H-1,4-Benzoxazin-2-one, 3,3'-(2-oxotrimethylene)bis[5,7-dimethyl- **115759-36-9**, 2(1H)-Quinoxalinone, 3,3'-(2-oxotrimethylene)bis[1-phenyl-124121-76-2, 2H-Naphth[2,3-b]-1,4-oxazin-2-one, 3,3'-(2-oxotrimethylene)bis-(prepn. of)